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## **MORPHOLOGICAL STUDY OF LINEAR MARKETPLACES UPON FIXATION LINE OF SHANGHAI**

**Abstract:** *In Shanghai, over 60 marketplaces have been built upon the fixation lines such as deserted railways, covered rivers, boundary of planned future parks over the last three decades. These markets squeeze resources out of the linear and irregular strips of land, generating new places that are strongly connected to their surrounding neighborhoods.*

*From the perspective of individual building, fixation line is a linear space with a considerable width to contain a large marketplace over 5000m<sup>2</sup>, serving more than sixty thousand residents' daily lives. Although the building pattern of the marketplace shows clearly of the impact the fixation line, the research reveals that the actual network on site is on the other hand breaking down the pattern from the inside, making the maximum usage of the resources created by these former barriers of the city. The influences of both previous systems that form the fixation line and the current building pattern on site are affecting these linear market places simultaneously, which would bring about possible reflections to both policymakers and architects dealing with urban regeneration projects.*

**Keywords:** *fixation line, marketplace, street system, building pattern, network on site, urban regeneration*

### **Introduction**

The development of Shanghai is strongly influenced by several strong fringe belts in the last century. There are natural belts such as the Huangpu River, and artificial belts such as Huning Railway to the north, Huhang Railway (inner ring) to the west and Huhang Railway (outer ring) to the south. The demolishment of the west belt in 1990s removed one of the strongest barriers of the urban development, with clear traces left behind.

A series of unique buildings have been built along or even upon the line, among which, some marketplaces are the most typical ones, supplying the daily lives of millions of residences with their deep spaces and complicated networks. Their peculiar linear plans bring about lots of reflections to architects both in their designs and researches.

In Shanghai, marketplaces are one of the most frequently visited public spaces for local citizens, whose layout shows clearly of the network of the plot. Hence, the morphological study of these market places, taking the Hongzhu Market (Fig. 1) for example, helps to reveal the mechanisms of the transformation of the fixation line in Shanghai, a city that has been growing so rapidly over the last century, swallowing and flattening barriers of all kinds.

Since 2016, the Shanghai government initiated several projects to propel gradually the regeneration of series of leftover urban spaces, including the majority of these marketplaces, which could eventually lead to their demolishment. Hence, the studies to these unique forms of urban space in Shanghai are necessary in both retrospect and prospective dimensions.

### **Hidden paths on site**

Before taking a study of these linear marketplaces, some important background of the city of Shanghai should be clarified: in current downtown of Shanghai, each plot is surrounded by solid walls, with very limited gates (usually with two entrances for the vehicles and one or two more

for pedestrian) to the main street, many of which are strictly controlled and supervised. Hence, certain elements of a plot become essential when taking a research of the site.



Figure 1. Aerial photography of the Hongzhu Market & Metro Line 3 near Hongqiao Rd. Station

For instance, the internal paths of the plot contribute as hidden path that cut through each large street block. Whenever it occurs, the path that connects the two separate gates of the enclosed plot, is always producing strong connection from one side of the block to the other. Hence, if there were any flow attracting spots on site, such as a metro station, the entire hidden path would be more visible. These hidden paths, sometimes not even noticed yet by the modern navigation system, secretly help to build up the internal structure of the city.

Certainly, it would be difficult to portrait all the internal paths because once walks through a gate, one enjoys great freedom to wander around buildings, making a rather ambiguous structure of each residential blocks. The only thing that is clear about a plot, is its walls and gates, besides that, no matter how physically close one building is to the main street, it should still be considered as hidden deep inside the plot (Fig. 2).

Hence, the layout of the walls of each plot is of the same importance, if not more important than the building patterns. Most of the time, the wall functions as a dominating element of the structure in the plot. The combination of wall and building forms the solid boundary of the site. Sometimes, when a building becomes part of the wall, the building starts to inherit some very interesting characters of the wall, such as blocking the path, and containing controlled gates (Fig. 3).

Only when we fully notice the relationship between buildings, walls and gates, can we start to notice the structure hidden on site, and the linear marketplaces that is built upon the fixation lines could be studied.



Figure 2. A building that is physically close to the street is block by the wall



Figure 3. A building as a wall with a gate, Meidong Marketplace, Shanghai

### Temporal buildings on the fixation line

The barriers that Shanghai had endured during the last century had deeply influence its developments. These barriers, like what had happened to other cities, left clear traces in the layout of the city. When almost every piece of land has been planned and built, the traces of the barriers, the former fixation line, became the most important playground for temporal buildings.

The width of the fixation line, at the scale of urban morphology, a fixation line is merely a line, separating two plots. However, when talking about the architectural issue, the line, which is usually at the width of 10m~30m (railway, waterbody, park), appears to become a linear site that can contain a large marketplace of more than 5000 square meters.

The buildings on fixation line are of several types: parking place, warehouse, sports utility, park and marketplace. Marketplace is the one with maximum public accessibility among the list. Most of them are temporal, using very limited resources while enjoying great benefits of the site.

A line is rich in its gross area, but poor in its interface. In many cases, their sites have only less than 20 meters of façade on the street, with spaces trapped deep inside, blocked by the walls of the neighboring plots. To some extent, these linear marketplaces could be considered as walls with hidden paths, which secretly transform the structure of the urban network. Their linear plot has multiple “heads” and usually no “tails”, rebuilding the flows of the site, and hence the tiny shops deep inside the 300m long market could find their ways to survive.

After a throughout survey of the linear market in Shanghai, 54 cases have been discovered. Their sites have several origins: railways, water body, roads and planned green belts. Their locations are scattered around Shanghai, where the former fixation lines were (Fig. 4). The size of these marketplaces is varied, from less than 1000 square meters to over 5000 square meters, with a length from 50m up to 400m. The width of the market places is from 10m to 30 m.

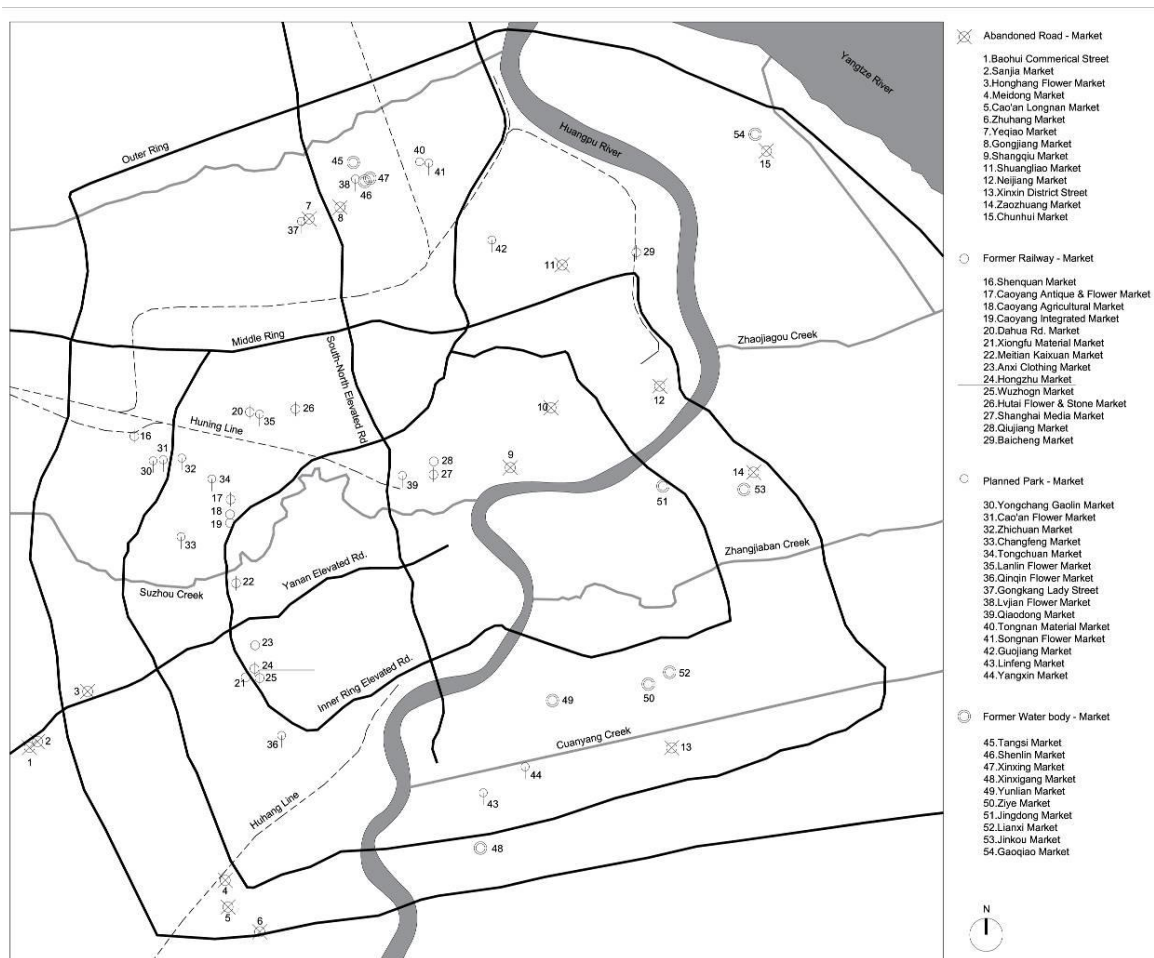


Figure 4. Location and origin of the 54 markets' sites

### A study of the Hongzhu Market

The Hongzhu Market is a case that is very close to the center of Xujiahui District. Its curved shape makes it easy to be noticed from satellite images. When we look back to the development of the railway system in Shanghai, The Hongzhu Marketplace is built upon a very special railway.

Basically, the network of the site is redefined several times by the building and demolishing of two railways, Huhang Line (inner ring) and Xuhong Branch Line, in the last 70 years. The Huhang Line (inner ring), going from north to south, which had been acting as one of the most powerful barrier of Shanghai's development, was an important line to connect the former north station and south station, taking a long way around the then French Concession. The Xuhong Branch Line, going from west to east, controlled by Shanghai Civil Aviation Administration (other lines with the ownership of Railroad Bureau), was specially built to deliver chemical substances and petrol to the Hongqiao Airport (Fig. 5).

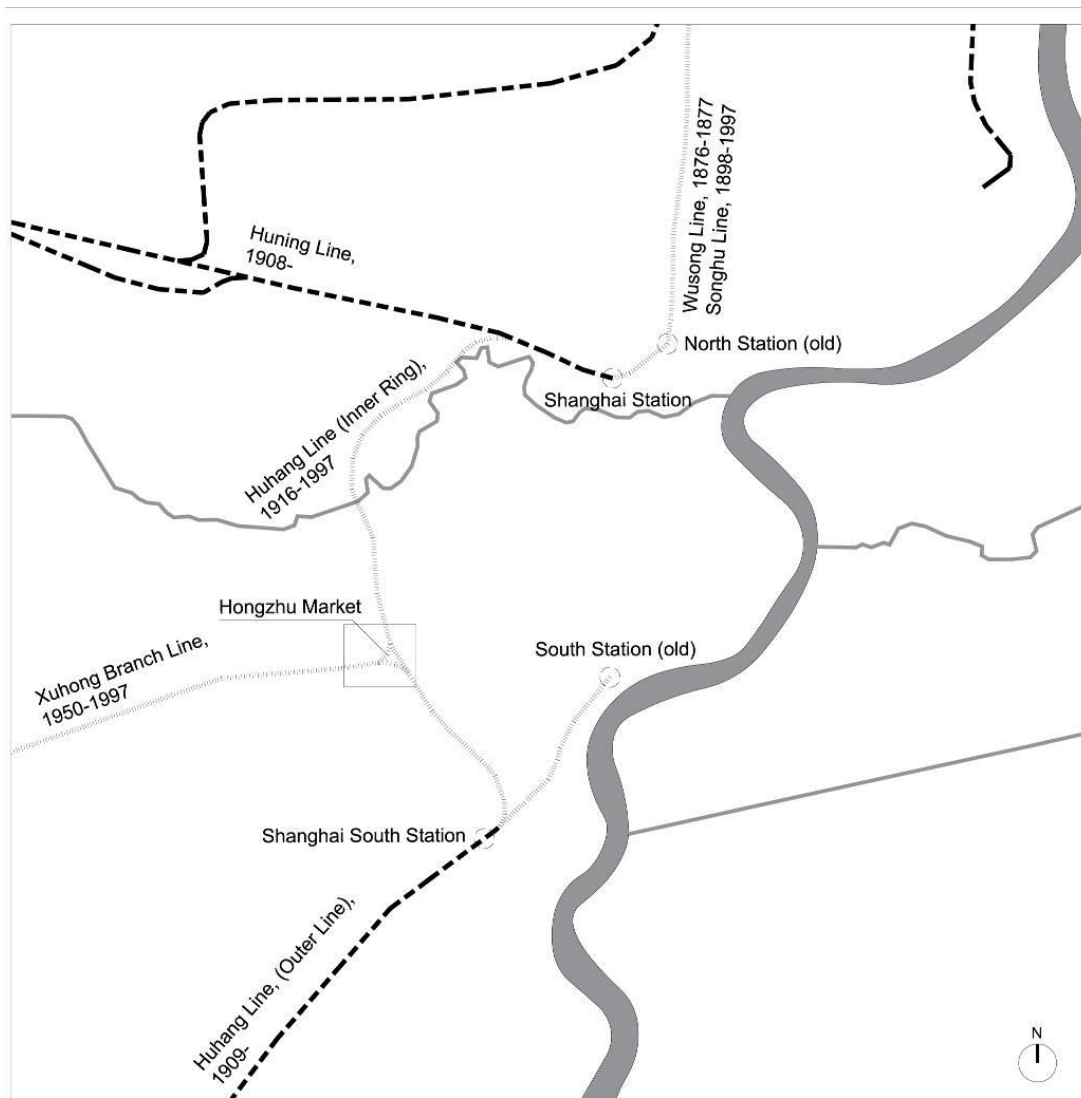


Figure 5. A map that shows the location and the formation of the railway system around the Market in the city level

Both lines were fully abundant and demolished in 1997, with the Huhang Line transformed into part of the elevated Metro Line 3 while the site of the Xuhong Branch Line remains undeveloped. Along the line, many temporal structures had been built, including the Hongzhu Market.



Late in 1948, the site was still mainly shaped by the Huhang Line that goes from north to south. This barrier made the texture of the city quite different on both sides, to the east of this line; enclosed plots and large villages had already taken up more than 60% of the land. On the other hand, to the west, there were merely scattered villages and standalone villas in the farmland (Fig. 6).

After the Xuhong Line was built in 1950, the city also pushes its developments to the west. In the *General Planning of Shanghai of 1960*, the land to the west of the line was planned with mainly residential and public facilities. The satellite map of 1979 shows that, while the land to the east is still getting denser, the land to the north of the branch line is also filled with enclosed plots. The separation between the north and south on site start to appear. Due to the turning radius of the trains, a piece of triangular land emerged, trapped by three railways from all directions (Fig. 7).

In 1994, the enclosed plots had taken up majority of the land, leaving merely several shanty towns trapped within. The triangular land had also been fully developed. At that period of time, although the railway was still there, there was already much less trains on the way since a new railway line had been built to the far west of the city. Hence, the actual effect of the railway to the normal traffic had been decreasing, comparing to what had happened two decades ago. That is making the street system rather close to the nowadays situation, and the plots on both of the railway, especially north and south, is not strictly separated than it used to be (Fig. 8).

Since the transformation of the Huhang Line into the elevated Metro Line 3 and the demolishment of the Xuhong Branch Line in 1997, a series of temporal buildings were built on along. In the Map of 2017, the enclosed plots had already taken up almost every pieces of land. The Hongzhu Market situated between the Changning District and Xuhui District, which makes the market survive during the latest demolishment movements, in which the Wuzhong Market to the south has already been regenerated into a linear park (Fig. 9).

From the development of the site, one can clearly see how the railway delivered its influences to its successors, however, if we keep in mind of the time scale of this dramatic transformation, and compare it to that of the western cities, it is clear that the railway was almost swallowed and digested. In the research of Alnwick by Mr. M. R. G. Cozen, for instance, the time scale of the site development is around 180 years (1774-1956), but for the case of the Hangzhou Market, the transformation from rural to downtown only takes around 60 years.

The differences of the time scale, helps us to understand the fact that, although there were also very strong from of fixation line left on site, the plots shaped by the line were actually built around similar period of time, which provide a strong base for the latter development of the markets on site, in this rather homogeneous urban medium.

When zoomed in to the scale of the building, it is not easy to distinguish the orientation of “in” and “out” of the city, leaving only the shape of the plot that keeps affecting the site. As for the Hongzhu market, the main task of the building is now how to fully unitize the curvature of the site that was designed for the train to pass through. The curve shifted the position of two entrances, utilizing the urban short cut that could once only be used by train (Fig. 10). The linear space for the train to deliver the passengers and cargos is now utilized by the market to deliver consumers deep in to the buildings (Fig. 11).

The market is not satisfied with the limited two main entrances on both sides. A tinny gate was built in the middle of the market to the enclosed living plot to the north in the name of “Emergency Door”. This tiny connection secretly builds up a link between the public space and the common space inside the wall. Regardless of its size, the gate soon became almost as important as the main gate of the plot. The two photos taken in 2011 (Fig. 11) and 2018 (Fig. 12) show how the market has been gradually blocked by its neighbor, first through supervision, and then through solid panel.

Although the envelope of the market remains the same for the last decades, the content has been revising all the time. In 2015, the south part of the market is half arranged as bicycle parking lot (Fig. 13), while in 2018, these parking spaces had been removed, rebuilt with new shops (Fig. 14). In the market like this, there is a direct feedback system between the program and space.



Figure 6. Site map, 1948



Figure 7. Site map, 1979



Figure 8. Site map, 1994

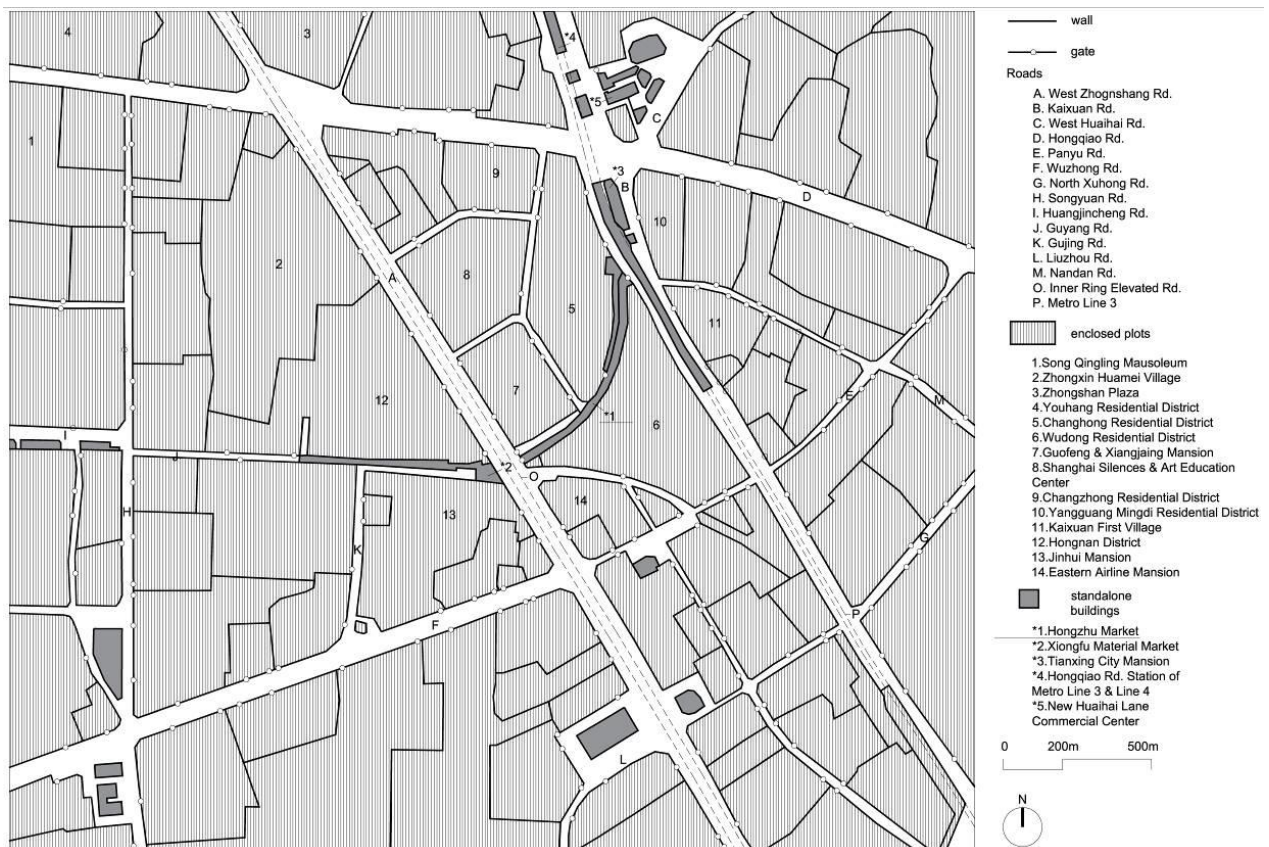


Figure 9. Site map, 2017





Figure 10. Interior of the market, 2018

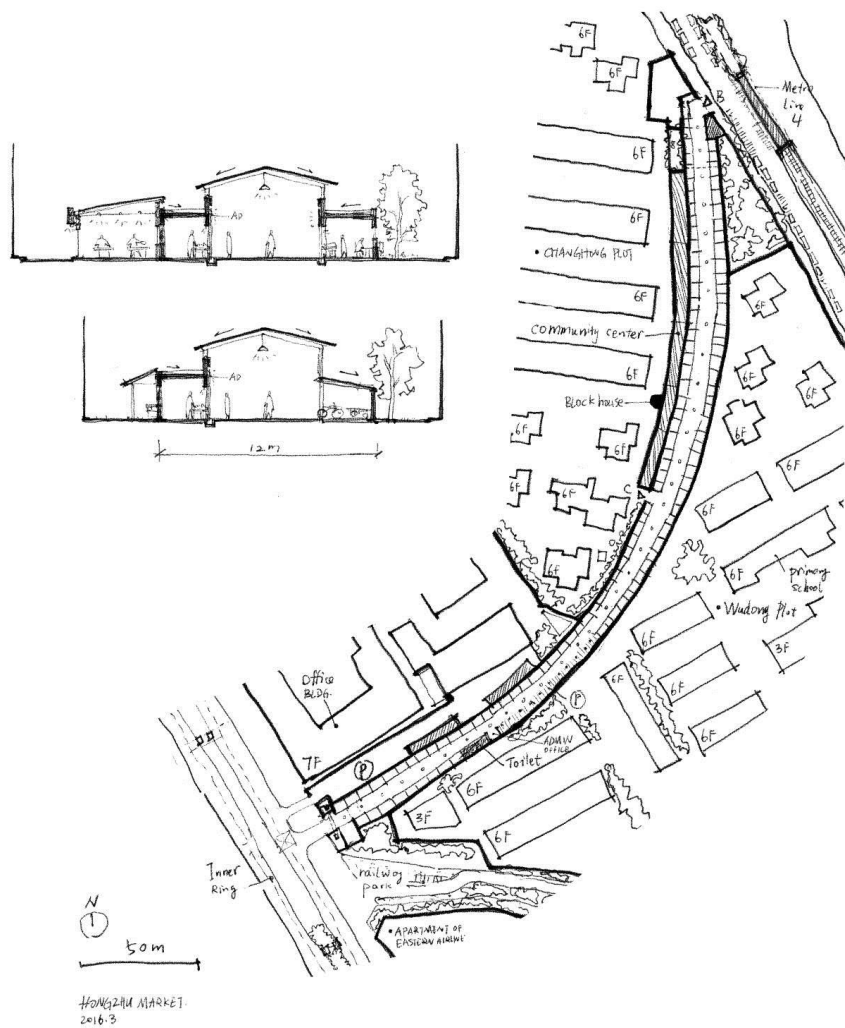


Figure 11. A field sketch of the Hongzhu market, 2016



Figure 12. A lady watching the side entrance from the outside, 2011



Figure 13. The side entrance being blocked, 2018



Figure 14. The bicycle parking lot in the market, 2015



Figure 15. The bicycle parking lot being transformed into new shops, 2018

## Reflections & Conclusions

### 1. Reversed “building” & “demolishing” (of networks)

In such a city fenced by walls, the distinction between the act of building and demolishing is sometimes reversed. When the government plans to demolish a building, they actually write a big red Chinese character of “CHAI (拆)” on the wall, which is temporally built to block the door of the building. Hence, by building a wall, people are demolishing the network. On the other hand, as for the Hongzhu Market, demolishing parts of the wall is making a new opening to the neighborhood, building up a new network that helps the marketplace to survive better.

### 2. Walls and gates are the dominating elements of the network on site.

The maps, which mainly concern about the building patterns, do not represent the actual structure of the site in Shanghai. Meanwhile, a map with merely walls and gates of each plot is more useful in field investigation and site analysis, which helps to demonstrate both the clear and ambiguous part of the site network. One can easily imagine the street and the hidden path in different levels through these maps.

### 3. Geometrical twisting provides both spaces and connections.

The fixation line, inheriting its original logic of the line, for instance, railway system, provides a very unique piece of land, with strong irregular or twisted shape. Hence, when studying the form of these buildings, the very topic turns to the fact of how they are using the twisted shape to provide both spaces and connections. Otherwise, the peculiar shape is almost meaningless to these marketplaces. Buildings such as Wukang Mansion, with also a very unique piece of land, is presenting its strong presence on the street corner of the road, while this quality is completely ignored in these marketplaces.

### 4. The over-flow & shrinkage of the program.

The Marketplaces are temporally built on the given pieces of lands, which means, the original plot is not designed specifically for the program of the market. Actually, they are either too large or too small. Here, the flexibility of the program is fully demonstrated, not only does the over-flow or shrinkage happen when the site is too small or too big, it can even switch, which means, it can overflow on one side of the site, while shrink on the other side of one building, as if the content and its container do not even need to match each other at any sense.

### 5. “Permanent” & “temporal” structures are equally building the environment.

No matter how temporal, these markets are still solid buildings with structures. Due to the unique origins of their sites, usually strong physical structures or hidden building rules are left on site. On the other hand, due to the shifting of the program within the building, the actual need of the space would never match the previous structure, meaning that a secondary or even a third level of sub-structures are to be built to follow the need of the program. In these marketplaces, one can easily distinguish the differences of the temporal and permanent structures. However, in the final built environment, these different levels of structures are treated evenly, equally used or, ignored.

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